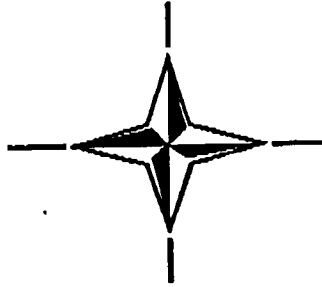


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STANAG No. 4439  
(Edition 1)

**NORTH ATLANTIC TREATY ORGANIZATION  
(NATO)**

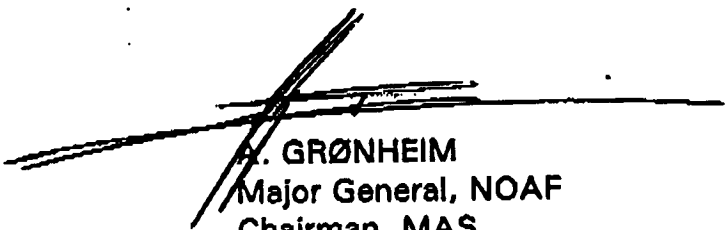


**MILITARY AGENCY FOR STANDARDIZATION  
(MAS)**

**STANDARDIZATION AGREEMENT  
(STANAG)**

**SUBJECT: POLICY FOR INTRODUCTION, ASSESSMENT AND TESTING  
FOR INSENSITIVE MUNITIONS (MURAT)**

Promulgated on 18 November 1998



A. GRØNHEIM  
Major General, NOAF  
Chairman, MAS

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*Robert*

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**NORTH ATLANTIC TREATY ORGANIZATION  
ORGANISATION DU TRAITE DE L'ATLANTIQUE NORD**

**MILITARY AGENCY FOR STANDARDIZATION (MAS)  
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**18 November 1998**

**MAS/431-PPS/4439**

**See MAS Distribution List N° 2**

**STANAG 4439 PPS (EDITION 1) - POLICY FOR INTRODUCTION, ASSESSMENT  
AND TESTING FOR INSENSITIVE MUNITIONS (MURAT)**

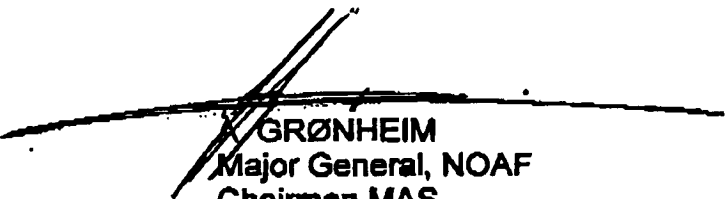
**Reference:**

**AC/310-D/131 dated 27 March 1995 (Edition 1) (1<sup>st</sup> Draft)**

1. The enclosed NATO Standardization Agreement which has been ratified by nations as reflected in page iii is promulgated herewith.
2. Reference listed above is to be destroyed in accordance with local document destruction procedures.
3. AAP-4 should be amended to reflect the latest status of the STANAG.

**ACTION BY NATIONAL STAFFS**

4. National staffs are requested to examine page iii of the STANAG and, if they have not already done so, advise the Defence Support Division of their intention regarding its ratification and implementation.

  
**GRØNHEIM  
Major General, NOAF  
Chairman MAS**

**Enclosure:**

**STANAG 4439 (Edition 1)**

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RECORD OF AMENDMENTS

No.	Reference/date of amendment	Date entered	Signature

EXPLANATORY NOTES

AGREEMENT

1. This NATO Standardization Agreement (STANAG) is promulgated by the Chairman MAS under the authority vested in him by the NATO Military Committee.
2. No departure may be made from the agreement without consultation with the tasking authority. Nations may propose changes at any time to the tasking authority where they will be processed in the same manner as the original agreement.
3. Ratifying nations have agreed that national orders, manuals and instructions implementing this STANAG will include a reference to the STANAG number for purposes of identification.

DEFINITIONS

4. Ratification is "In NATO Standardisation, the fulfillment by which a member nation formally accepts, with or without reservation, the content of a Standardization Agreement" (AAP-6).
5. Implementation is "In NATO Standardisation, the fulfilment by a member nation of its obligations as specified in a Standardization Agreement" (AAP-6).
6. Reservation is "In NATO Standardization, the stated qualification by a member nation that describes the part of a Standardization Agreement that it will not implement or will implement only with limitations" (AAP-6).

RATIFICATION, IMPLEMENTATION AND RESERVATIONS

7. Page iii gives the details of ratification and implementation of this agreement. If no details are shown it signifies that the nation has not yet notified the tasking authority of its intentions. Page (iv) (and subsequent) gives details of reservations and proprietary rights that have been stated.

**RATIFICATION AND IMPLEMENTATION DETAILS**  
**STADE DE RATIFICATION ET DE MISE EN APPLICATION**

N A T I O N  P A Y S	NATIONAL RATIFICATION REFERENCE	NATIONAL IMPLEMENTING DOCUMENT	IMPLEMENTATION MISE EN APPLICATION					
			INTENDED DATE OF IMPLEMENTATION			DATE IMPLEMENTATION WAS ACHIEVED		
			DATE ENVISAGEE DE MISE EN APPLICATION			DATE EFFECTIVE DE MISE EN APPLICATION		
			NAVY MER	ARMY TERRE	AIR	NAVY MER	ARMY TERRE	AIR
BE								
CA	2441-4439(DAPM) of/du 11.08.98	STANAG 4439 AOP-39				09.98	09.98	09.98
DA	MA 204.69-S4439/MAM3-15360 of/du 21.07.95	STANAG 4439	01.99	01.99	01.99			
FR								
GE								
GR								
IT	312/1468/97/USG of/du 29.05.97			09.98	09.98			
LU	BO3522/95 of/du 07.07.95			N.I.			N.I.	
NL	M95014G34 of/du 28.07.95	STANAG 4439				09.98	01.97	01.97
NO	MAS-694/95/HST/U3/BØ/STANAG 4439 of/du 27.07.95	STANAG 4439				01.96	01.96	01.96
PO								
SP								
TU								
UK	D/DSTAN/341/8/2805 of/du 22.02.95	STANAG 4439				09.98	09.98	09.98
US	OUSD(A&T)S&TS/M of/du 20.6.96	MIL-STD-2105B				06.96	06.96	06.96

See overleaf reservations(\*)/comments (+)  
 Voir au verso réserves (\*)/commentaires (+)

RESERVES/RESERVATIONS

NAVY/ARMY/AIR

NATO STANDARDIZATION AGREEMENT  
(STANAG)

POLICY FOR INTRODUCTION, ASSESSMENT AND TESTING FOR INSENSITIVE MUNITIONS  
(MURAT)

ANNEXES

- A. Insensitive Munition Requirement Goals and Tests.
- B. Appropriate National Test Procedures.

RELATED DOCUMENTS

AOP-15        Guidance on the Assessment of the Safety and Suitability for Service of Munitions for NATO Armed Forces.

AOP-39        Guidance on the Development, Assessment and Testing of Insensitive Munitions (MURAT)

STANAG 4123 Determination of the Classification of Military Ammunition and Explosives

STANAG 4240 Liquid Fuel Fire Tests for Munitions.

STANAG 4241 Bullet Attack Tests for Munitions.

STANAG 4382 Slow Heating, Tests for Munitions.

STANAG 4396 Sympathetic Reaction. Munition Test Procedure.  
[Draft]

AIM

- 1. The aim of this agreement is to establish a standardized policy for the development, assessment and testing of Insensitive Munitions(MURAT).

AGREEMENT

- 2. Ratifying nations agree that:
  - a. Whenever it is feasible to do so, Insensitive Munitions shall be developed and introduced into service.
  - b. The results of threat hazard assessments(assessments of threats to the munition), assessment of tests results, assessments and tests to evaluate Insensitive Munitions(MURAT) performed in accordance with this document and the associated AOP-39 developed to define the methodology for these and other matters, will be provided by the developing nation.

## DEFINITION

3. Insensitive Munitions(MURAT). Munitions which reliably fulfil their performance, readiness and operational requirements on demand, but which minimize the probability of inadvertent initiation and severity of subsequent collateral damage to weapon platforms, logistic systems and personnel when subjected to unplanned stimuli. Ultimate/ideal requirement goals and tests are given in Annex A.

## GENERAL

4. Technological advances in the design of explosive ordnance are permitting the development of a range of munitions termed Insensitive Munitions (IM) or Munitions à Risques Atténués (MURAT) which are less vulnerable to accidents or combat induced stimuli than previous weapons. Such munitions remain effective in their intended application, but are less sensitive to extreme but credible environments such as heat, shock or impact than their predecessors.
5. Introduction of IM into service will, in many cases, enhance the survivability of logistical and tactical combat systems thereby minimizing injury to combat personnel. In addition, IM have the potential of providing more cost effective and efficient transport, storage and handling of munitions.

## DETAILS OF THE AGREEMENT

6. Participating nations agree to introduce IM into service where it is feasible to do so. The availability of IM technology shall be considered in all munitions development and replenishment activities. Therefore, all further procurement of munitions should meet the applicable IM requirement goals at Annex A, subject to consideration of the benefits.
7. Each nation will be responsible for the IM assessment and requirements of munitions to be used by its own forces. Assessment of munitions against the IM requirement goals at Annex A complements, but does not replace, assessment of safety and suitability for service.
8. In general, all munitions, other than those that can be assessed as meeting the IM requirements without testing, shall be subjected to the tests specified in Annex A.
9. In cases where some of the IM tests are not required as a result of analyses conducted in accordance with AOP-15, or where nations have inherently different environmental hazards and operational requirements, then these IM tests shall be omitted or adjusted to meet those analyses or requirements.
10. Each nation reserves the right to carry out additional testing if considered necessary and, if so, to bear the financial, technical and safety consequences of conducting the tests. However, arrangements shall exist whereby nations requiring to conduct additional testing can obtain assistance, under conditions to be negotiated, from the nation developing the munition.
11. Any significant changes to the agreed procedure for assessing the extent to which a munition design and/or configuration has achieved IM requirements shall be specified and agreed before the tendering process is entered by the participating nations which are to receive the munition. Changes made without mutual acceptance may negate acceptability of the IM assessment results.

12. IM tests shall be conducted on the final design of the munitions fabricated to production standards. Deviations from this design shall be identified and supporting information shall be provided to confirm the validity of the IM tests as a result of any design or production change. Items within the munition may be substituted by non-functional items and IM tests may be performed on the major components separately provided this does not detract from the purpose of the test and is specified in detail in the test plan and results.
13. To satisfy national IM policy, nations may assign categories based on the degree of insensitiveness and explosiveness that a munition has attained.
14. It is recognized that the tests at Annex A may not be sufficient to completely assess munition response to the potential threats. Therefore, all pertinent information from development tests, any unique national safety evaluation procedures, and IM assessments and tests shall be considered in making a final IM assessment for a munition.
15. IM assessment plans should be arranged, as far as possible, to minimize unnecessary duplication in testing and assessment programs including those conducted for hazard classification in accordance with STANAG 4123 and system vulnerability.
16. The nation responsible for the development of the IM shall provide to the procuring nations on request the assessment and test results required to assess the extent to which the munition has achieved the IM requirement.

#### IMPLEMENTATION OF THE AGREEMENT

17. This STANAG is implemented when a nation has issued instructions that all future munitions developed for its forces will be assessed or tested in accordance with the procedures detailed in this agreement.



INSENSITIVE MUNITION REQUIREMENT GOALS AND TESTS

Ser	Potential Threats	Test and Test Specification(1)	IM Requirement Goals
(a)	(b)	(c)	(d)
1	Magazine, Store, Aircraft or Vehicle fuel fire	Liquid Fuel Fire Test for Munitions STANAG 4240	No response more severe than Type V (Burning Reaction)
2	Fire in Adjacent Magazine, Store or Vehicle	Slow Heating, Munition Test Procedure STANAG 4382	No response more severe than Type V (Burning Reaction)
3	Small Arms Attack	Bullet Attack Tests for Munitions STANAG 4241	No response more severe than Type V (Burning Reaction)
4	Fragmenting Munition Attack	See Annex B for National Test Procedure	No response more severe than Type V (Burning Reaction)
5	Shaped Charge Weapon Attack	See Annex B for National Test Procedure	No response more severe than Type III (Explosion)
6	Behind Armour Debris from Armour Attack	See Annex B for National Test Procedure	No response more severe than Type V (No Sustained Burning Reaction)
7	Detonation in Magazine/Store/ Aircraft or Vehicle	Sympathetic Reaction, Munition Test Procedures STANAG 4396	No response more severe than Type III (Explosion) of acceptor munitions

Note:

- (1) It is recognized that the tests in column (c) may not be sufficient to completely assess munition response to the potential threats.

APPROPRIATE NATIONAL TEST PROCEDURES

Ser	Potential Threats	Appropriate National Test Procedures (1)	IM Requirement Goals
(a)	(b)	(c)	(d)
1	Fragmenting Munition Attack	Mil-Std-2105B (US) IT 9282-4 ED1989(FR)	No response more severe than Type V (Burning Reaction)
2	Shaped Charge Weapon Attack	Mil-Std-2105B (US)	No response more severe than Type III (Explosion)
3	Behind Armour Debris from Armour Attack	Mil-Std-2105B (US)	No Response more severe than Type V (No Sustained Burning Reaction)

Note:

- (1) It is recognized that the tests in column (c) may not be sufficient to completely assess munition response to the potential threats.